

CLAIMS

1. An alignment mark in which a plurality of at least one of mesa and trench type unit marks are aligned with a predetermined gap therebetween in an underling layer to which a chemical mechanical polishing process is applied so that alignment signals are formed during an alignment process,

wherein the unit marks are formed by aligning in an inline type at least one or more of mesa and trench patterns with a sufficiently close pattern in order to prevent a dishing phenomenon during a chemical mechanical polishing process.

2. The alignment mark as claimed in claim 1, wherein the mesa pattern is formed with a predetermined pitch within the trench type of unit mark, and the trench pattern is formed with a predetermined pitch within the mesa type of unit mark.

3. The alignment mark as claimed in claim 1, wherein the mesa patterns and trench patterns are parallel to the lengthwise direction of the unit mark and aligned in a width direction of the unit mark in line, when the unit mark is formed in a rectangular shape having a predetermined length and width.

4. The alignment mark as claimed in claim 1, wherein the pattern pitch P' of at least one of the mesa and trench patterns is determined by the formula, $P'=P/(2n'+1)$.05 (n' : natural number),

wherein $P \sin \theta = n \lambda$, P : pitch between the unit marks, λ : wave length of first probing beam, θ : diffraction angle, n' : the number of mesa or trench patterns, n : diffraction order,

λ' : wave length of second probing beam for illuminating the mesa or trench patterns,

$2n'+1$: diffraction order by the wave length λ' of second probing beam.

5. The alignment mark as claimed in claim 4, wherein when the pitch P between the unit marks is in the range of 7.8 to 8.2 , the pattern width t' and pattern pitch P' are formed in the range of 2.65 - 2.67 and in the range of 5 - 5.4 , respectively, when the diffraction order $2n'+1$ is 3.

6. The alignment mark as claimed in claim 4, wherein when the pitch P between the unit marks is in the range of 7.8 to 8.2 , the pattern width t' and pattern pitch P' of at least one of the mesa and trench patterns are formed in the range of 1.59 - 1.61 and in the range of 3.1 - 3.3 , respectively, when the diffraction order $2n'+1$ is 5.

7. The alignment mark as claimed in claim 4, wherein when the pitch P between the unit marks is in the range of 7.8 to 8.2 , the pattern width t' and pattern pitch P' of at least one of the mesa and trench patterns are formed in the range of 1.13 - 1.15 and in the range of 2.27 - 2.29 in its size, respectively, when the diffraction order $2n'+1$ is 7.